

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. 2002-NM-30-AD; Amendment 39-12701; AD 2002-07-07]

RIN 2120-AA64

Airworthiness Directives; Boeing Model 777-200 Series Airplanes Equipped With General Electric GE90 Series Engines

AGENCY: Federal Aviation Administration, DOT.

ACTION: Final rule; request for comments.

SUMMARY: This amendment adopts a new airworthiness directive (AD) that is applicable to certain Boeing Model 777-200 series airplanes equipped with General Electric GE90 series engines. This action requires repetitive inspections of the diagonal brace and forward seals of the aft fairing of the strut to find discrepancies, and corrective actions, if necessary. This action is necessary to prevent primary engine exhaust from entering the aft fairing of the strut and elevating the temperature, which could lead to heat damage of the seals and diagonal brace. Such damage could result in cracking and fracture of the forward attachment point of the diagonal brace, loss of the diagonal brace load path, and consequent separation of the strut and engine from the airplane. This action is intended to address the identified unsafe condition.

DATES: Effective April 24, 2002.

The incorporation by reference of certain publications listed in the regulations is approved by the Director of the Federal Register as of April 24, 2002.

Comments for inclusion in the Rules Docket must be received on or before June 10, 2002.

ADDRESSES: Submit comments in triplicate to the Federal Aviation Administration (FAA), Transport Airplane Directorate, ANM-114, Attention: Rules Docket No. 2002-NM-30-AD, 1601 Lind Avenue, SW., Renton, Washington 98055-4056. Comments may be inspected at this location between 9:00 a.m. and 3:00 p.m., Monday through Friday, except Federal holidays. Comments may be submitted via fax to (425) 227-1232. Comments may also be sent via the Internet using the following address: 9-anm-iarcomment@faa.gov. Comments sent via fax or the Internet must contain "Docket No. 2002-NM-30-AD" in the subject line and need not be submitted in triplicate. Comments sent via the Internet as attached electronic files must be formatted in Microsoft Word 97 for Windows or ASCII text.

The service information referenced in this AD may be obtained from Boeing Commercial Airplane Group, P.O. Box 3707, Seattle, Washington 98124-2207. This information may be examined at the FAA, Transport Airplane Directorate, 1601 Lind Avenue, SW., Renton, Washington; or at the Office of the Federal Register, 800 North Capitol Street, NW., suite 700, Washington, DC.

FOR FURTHER INFORMATION CONTACT: John Vann, Aerospace Engineer, Propulsion Branch, ANM-140S, FAA, Seattle Aircraft Certification Office, 1601 Lind Avenue, SW., Renton, Washington 98055-4056; telephone (425) 227-1024; fax (425) 227-1181.

SUPPLEMENTARY INFORMATION: The FAA has received reports that, during routine inspections of the aft fairing of the strut, evidence of an elevated temperature in the interior cavity of the aft fairing has been found on several Boeing Model 777-200 series airplanes equipped with General Electric GE90 series engines. One operator reported significant heat damage to the forward end of the diagonal brace on the left strut of a General Electric GE90 powered airplane. The diagonal brace material is aluminum 7075-T73, with a specified conductivity range of 38.0 through 42.5 percent International Annealed Copper Standard (IACS). The damaged brace assembly had a conductivity reading of 47 percent IACS. Investigation revealed that the damage was caused by primary engine exhaust entering the aft fairing of the strut through a gap in the heat shield and elevating the temperature, resulting in heat damage to the primary fire seal, heat shield seal, and secondary fluid seal. The damaged seals allowed the exhaust to pass into the aft fairing cavity causing heat damage to the diagonal brace assembly. Such damage, if not found and fixed, could result in cracking and fracture of the forward attachment point of the diagonal brace, loss of the diagonal brace load path, and consequent separation of the strut and engine from the airplane.

Related Rulemaking

In light of this AD, the FAA is considering withdrawing Notice of Proposed Rulemaking (NPRM) 2001-NM-93-AD (66 FR 54727, October 30, 2001). That NPRM proposed to require installation of a high temperature silicone foam seal to fill the gap in the strut aft fairing fire seal and firewall.

Since the issuance of that NPRM, the FAA has received new information that indicates that the unsafe condition would not be prevented by the installation of the high temperature silicone foam seal alone. Of primary importance is the integrity of the existing primary fire, heat shield, and secondary fluid seals to prevent heat damage to the diagonal brace. This AD is being issued to require the inspection and maintenance of those existing seals, in addition to the inspection and maintenance of the diagonal brace. The installation of the high temperature silicone foam seal recommended in Boeing Service Bulletin 777-54A0015, dated January 18, 2001 (referenced in the NPRM as the appropriate source of service information for accomplishment of the specified actions), is not currently being mandated, and the FAA is considering withdrawal of the NPRM.

Explanation of Relevant Service Information

The FAA has reviewed and approved Boeing Alert Service Bulletin 777-54A0017, dated December 21, 2001, which describes the following procedures:

- Part 1 of the service bulletin specifies repetitive detailed inspections of the diagonal brace and forward seals of the aft fairing of the strut to find discrepancies, and corrective actions, if necessary. The discrepancies include heat damage to the diagonal brace and/or forward seals, and cracks and/or fracture of the diagonal brace. Part 1 also specifies either replacing the diagonal brace per Part 4 of the service bulletin if any crack or fracture is found, or contacting Boeing for rework instructions.

- If necessary, due to findings from the detailed inspection specified in Part 1 of the service bulletin, Part 2 of the service bulletin specifies a conductivity inspection to verify the conductivity of the diagonal brace material. If the diagonal brace is within the specified conductivity limits (38.0 through 42.5 percent IACS), the detailed inspection specified in Part 1 is repeated. If the diagonal brace is not within the specified conductivity limits (greater than 42.5 percent and less than or equal to 44 percent IACS), Part 2 specifies inspecting the strut to wing attachments and reworking if additional damage is found, and within 18 months, replacing the diagonal brace. If the conductivity limit is greater than 44 percent IACS, Part 2 specifies immediately replacing the diagonal brace. If the diagonal brace is within the specified limits, Part 2 specifies repeating the Part 1 inspection.
- Part 3 of the service bulletin specifies replacing any damaged seal (primary fire seal, heat shield seal, or secondary fluid seal, with a new seal), then repeating the Part 1 inspection. Part 3 also specifies contacting Boeing for alternate repair instructions for the seals.
- Part 4 of the service bulletin specifies replacing any damaged diagonal brace with a new brace, then repeating the Part 1 inspection.

We also have reviewed and approved Boeing All Operator Message M-7200-02-00173, dated January 30, 2002, which describes procedures for a temporary repair of the forward seals of the aft fairing of the strut.

Explanation of the Requirements of the Rule

Since an unsafe condition has been identified that is likely to exist or develop on other airplanes of the same type design, this AD requires accomplishment of the actions specified in the service information described previously, except as discussed below.

Differences Between This AD and the Alert Service Bulletin

Part 2 of the referenced service bulletin specifies a compliance time of 18 months for replacement of the diagonal brace if the brace is not within the specified conductivity limits (greater than 42.5 percent and less than or equal to 44 percent IACS); however, this AD requires the replacement be done within 90 days after the initial conductivity inspection if the brace is not within the specified conductivity limits.

In developing an appropriate compliance time for this AD, the FAA considered not only the manufacturer's recommendation, but the degree of urgency associated with addressing the subject unsafe condition, the average utilization of the affected fleet, and the time necessary to perform the modifications. In light of all of these factors, the FAA finds a compliance time of 90 days for completing the replacement to be warranted, in that it represents an appropriate interval of time allowable for affected airplanes to continue to operate without compromising safety.

The service bulletin also specifies that all actions for which the Boeing 777 Airplane Maintenance Manual (AMM) is specified as the appropriate source of service information for work instructions may instead be done according to an "operator's equivalent procedure." However, the FAA finds that Chapter 54-54-03 of the AMM must be used to accomplish the inspection of the forward seals of the aft fairing of the strut for signs of heat damage, which is specified in the Work Instructions in the service bulletin. For this inspection, an "operator's equivalent procedure" may be used only if approved as an alternative method of compliance per paragraph (c) of this AD.

Although the service bulletin specifies that the manufacturer may be contacted for disposition of certain rework/repairs, this proposed AD would require all rework/repairs to be accomplished per a method approved by the FAA, or per data meeting the type certification basis of the airplane approved by a Boeing Company Designated Engineering Representative who has been authorized by the Manager, Seattle Aircraft Certification Office, to make such findings.

Interim Action

This is considered to be interim action until final action is identified, at which time the FAA may consider further rulemaking.

Determination of Rule's Effective Date

Since a situation exists that requires the immediate adoption of this regulation, it is found that notice and opportunity for prior public comment hereon are impracticable, and that good cause exists for making this amendment effective in less than 30 days.

Comments Invited

Although this action is in the form of a final rule that involves requirements affecting flight safety and, thus, was not preceded by notice and an opportunity for public comment, comments are invited on this rule. Interested persons are invited to comment on this rule by submitting such written data, views, or arguments as they may desire. Communications shall identify the Rules Docket number and be submitted in triplicate to the address specified under the caption ADDRESSES. All communications received on or before the closing date for comments will be considered, and this rule may be amended in light of the comments received. Factual information that supports the commenter's ideas and suggestions is extremely helpful in evaluating the effectiveness of the AD action and determining whether additional rulemaking action would be needed.

Submit comments using the following format:

- Organize comments issue-by-issue. For example, discuss a request to change the compliance time and a request to change the service bulletin reference as two separate issues.
- For each issue, state what specific change to the AD is being requested.
- Include justification (e.g., reasons or data) for each request.

Comments are specifically invited on the overall regulatory, economic, environmental, and energy aspects of the rule that might suggest a need to modify the rule. All comments submitted will be available, both before and after the closing date for comments, in the Rules Docket for examination by interested persons. A report that summarizes each FAA-public contact concerned with the substance of this AD will be filed in the Rules Docket.

Commenters wishing the FAA to acknowledge receipt of their comments submitted in response to this rule must submit a self-addressed, stamped postcard on which the following statement is made: "Comments to Docket Number 2002-NM-30-AD." The postcard will be date stamped and returned to the commenter.

Regulatory Impact

The regulations adopted herein will not have a substantial direct effect on the States, on the relationship between the national Government and the States, or on the distribution of power and responsibilities among the various levels of government. Therefore, it is determined that this final rule does not have federalism implications under Executive Order 13132.

The FAA has determined that this regulation is an emergency regulation that must be issued immediately to correct an unsafe condition in aircraft, and that it is not a "significant regulatory action" under Executive Order 12866. It has been determined further that this action involves an emergency regulation under DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979). If it is determined that this emergency regulation otherwise would be significant under DOT Regulatory Policies and Procedures, a final regulatory evaluation will be prepared and placed in the Rules Docket. A copy of it, if filed, may be obtained from the Rules Docket at the location provided under the caption ADDRESSES.

List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

Adoption of the Amendment

Accordingly, pursuant to the authority delegated to me by the Administrator, the Federal Aviation Administration amends part 39 of the Federal Aviation Regulations (14 CFR part 39) as follows:

PART 39--AIRWORTHINESS DIRECTIVES

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

Sec. 39.13 [Amended]

2. Section 39.13 is amended by adding the following new airworthiness directive:

AIRWORTHINESS DIRECTIVE



Aircraft Certification Service
Washington, DC

U.S. Department
of Transportation
**Federal Aviation
Administration**

We post ADs on the internet at "www.airweb.faa.gov/rgl"

The following Airworthiness Directive issued by the Federal Aviation Administration in accordance with the provisions of Title 14 of the Code of Federal Regulations (14 CFR) part 39, applies to an aircraft model of which our records indicate you may be the registered owner. Airworthiness Directives affect aviation safety and are regulations which require immediate attention. You are cautioned that no person may operate an aircraft to which an Airworthiness Directive applies, except in accordance with the requirements of the Airworthiness Directive (reference 14 CFR part 39, subpart 39.3).

2002-07-07 Boeing: Amendment 39-12701. Docket 2002-NM-30-AD.

Applicability: Model 777-200 series airplanes equipped with General Electric GE90 series engines, as listed in Boeing Alert Service Bulletin 777-54A0017, dated December 21, 2001, certificated in any category.

Note 1: This AD applies to each airplane identified in the preceding applicability provision, regardless of whether it has been modified, altered, or repaired in the area subject to the requirements of this AD. For airplanes that have been modified, altered, or repaired so that the performance of the requirements of this AD is affected, the owner/operator must request approval for an alternative method of compliance in accordance with paragraph (c) of this AD. The request should include an assessment of the effect of the modification, alteration, or repair on the unsafe condition addressed by this AD; and, if the unsafe condition has not been eliminated, the request should include specific proposed actions to address it.

Compliance: Required as indicated, unless accomplished previously.

To prevent heat damage of the diagonal brace and forward seals of the aft fairing of the strut, which could result in cracking and fracture of the forward attachment point of the diagonal brace, loss of the diagonal brace load path, and consequent separation of the strut and engine from the airplane; accomplish the following:

Repetitive Inspections

(a) Within 500 flight hours after the effective date of this AD: Do a detailed inspection of the diagonal brace and forward seals of the aft fairing of the strut to find discrepancies (heat damage to the diagonal brace and/or forward seals, and cracks and/or fracture of the diagonal brace), per Part 1 of the Accomplishment Instructions of Boeing Alert Service Bulletin 777-54A0017, dated December 21, 2001. If no discrepancies are found, repeat the inspection after that every 1,000 flight hours.

Corrective Actions

(1) If any sign of heat damage to the diagonal brace is found: Before further flight, do the conductivity inspection of all areas of the forward clevis lugs and brace body of the diagonal brace, as specified in and per Part 2 of the Accomplishment Instructions of the service bulletin.

(i) If the conductivity readings are all within the specified range of 38.0 through 42.5 percent International Annealed Copper Standard (IACS); then repeat the inspection required by paragraph (a) of this AD every 1,000 flight hours.

(ii) If any conductivity readings are within the specified range of greater than 42.5 percent and less than or equal to 44 percent IACS, before further flight, do the inspection specified in and per Part 2 of the Accomplishment Instructions of the service bulletin. If additional damage is found, repair per a method approved by the Manager, Seattle Aircraft Certification Office (ACO), FAA, or per data meeting the type certification basis of the airplane approved by a Boeing Company Designated Engineering Representative (DER) who has been authorized by the Manager, Seattle ACO, to make such findings. For a repair method to be approved by the Manager, Seattle ACO, as required by this paragraph, the Manager's approval letter must specifically reference this AD. Within 90 days after doing the conductivity inspection, replace the diagonal brace with a new brace per Part 4 of the Accomplishment Instructions of the service bulletin. Then, repeat the inspection required by paragraph (a) of this AD every 1,000 flight hours.

(iii) If any conductivity readings are greater than 44 percent IACS, before further flight, replace the diagonal brace per Part 4 of the Accomplishment Instructions of the service bulletin. Then, repeat the inspection required by paragraph (a) of this AD every 1,000 flight hours.

(2) If any crack or fracture of the diagonal brace is found, before further flight, replace the diagonal brace with a new brace per Part 4 of the Accomplishment Instructions of the service bulletin; or rework the diagonal brace per a method approved by the Manager, Seattle ACO, or per data meeting the type certification basis of the airplane approved by a Boeing Company DER who has been authorized by the Manager, Seattle ACO, to make such findings. For a repair method to be approved by the Manager, Seattle ACO, as required by this paragraph, the Manager's approval letter must specifically reference this AD. Then, repeat the inspection required by paragraph (a) of this AD every 1,000 flight hours.

(3) If any sign of heat damage to any seal is found, before further flight, replace the seal per Part 3 of the Accomplishment Instructions of the service bulletin, or do the actions required by paragraph (a)(3)(i) or (a)(3)(ii) of this AD, as applicable. Then, repeat the inspection required by paragraph (a) of this AD every 1,000 flight hours.

(i) If there is any damage to any seal but no leakage of the seal is found, do a detailed inspection of the seal every 50 flight hours until the replacement or temporary repair is done per Boeing All Operator Message (AOM) M-7200-02-00173, dated January 30, 2002. Do the repair within 500 flight hours after the initial inspection required by paragraph (a) of this AD, or do the replacement within 1,000 flight hours after that initial inspection, as applicable. If the temporary repair is done, inspect the repaired seal every 500 flight hours until the seal is replaced. Replacement of the seal must be done within 1,000 flight hours after the repair is done.

(ii) If there is damage to any seal and leakage of the seal is found, before further flight, do the replacement or temporary repair of the seal per the AOM. If the temporary repair is done, inspect the repaired seal every 250 flight hours until the seal is replaced. Replacement of the seal must be done within 1,000 flight hours after the repair is done.

"Operator's Equivalent Procedure"

(b) Though Boeing Alert Service Bulletin 777-54A0017, dated December 21, 2001, specifies that an "operator's equivalent procedure" may be used for the inspection of the forward seals of the aft fairing of the strut for signs of heat damage, that inspection must be done according to Chapter 54-54-03 of the Boeing 777 Airplane Maintenance Manual, as specified in the service bulletin.

Alternative Methods of Compliance

(c) An alternative method of compliance or adjustment of the compliance time that provides an acceptable level of safety may be used if approved by the Manager, Seattle ACO. Operators shall submit their requests through an appropriate FAA Principal Maintenance Inspector, who may add comments and then send it to the Manager, Seattle ACO.

Note 2: Information concerning the existence of approved alternative methods of compliance with this AD, if any, may be obtained from the Seattle ACO.

Special Flight Permits

(d) Special flight permits may be issued in accordance with Secs. 21.197 and 21.199 of the Federal Aviation Regulations (14 CFR 21.197 and 21.199) to operate the airplane to a location where the requirements of this AD can be accomplished.

Incorporation by Reference

(e) Except as provided by paragraphs (a)(1)(ii), (a)(2), and (b) of this AD, the actions shall be done in accordance with Boeing Alert Service Bulletin 777-54A0017, dated December 21, 2001; and Boeing All Operator Message M-7200-02-00173, dated January 30, 2002; as applicable. This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies may be obtained from Boeing Commercial Airplane Group, P.O. Box 3707, Seattle, Washington 98124-2207. Copies may be inspected at the FAA, Transport Airplane Directorate, 1601 Lind Avenue, SW., Renton, Washington; or at the Office of the Federal Register, 800 North Capitol Street, NW., suite 700, Washington, DC.

Effective Date

(f) This amendment becomes effective on April 24, 2002.

Issued in Renton, Washington, on March 29, 2002.
Ali Bahrami,
Acting Manager, Transport Airplane Directorate, Aircraft Certification Service.
[FR Doc. 02-8280 Filed 4-8-02; 8:45 am]
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